

RETAINING ARRANGEMENT FOR ANCHORING OTOLOGIC DEVICES SUCH AS

HEARING AIDS, TINNITUS MASKERS, AND NOISE GENERATORS

[Haltevorrichtung zur Befestigung von otologischen Geraeten, wie

Hoergeraeten, Tinitusmaskern und Geraeuschgeneratoren]

Not named

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Description

**Retaining Arrangement for Anchoring Otologic Devices such as
Hearing Aids, Tinnitus Maskers, and Noise Generators**

The invention concerns a retaining arrangement for anchoring otologic devices such as hearing aids, tinnitus maskers, and noise generators in the auricle in accordance with claim 1.

Otologic devices such as hearing aids are becoming ever smaller and more efficient. Due to psychological reasons, it is attempted to place the hearing devices as "invisibly" as possible and the so-called concha devices are introduced into the auditory canal or into the concha and are hardly visible from outside.

This insertion of hearing devices into the auditory canal or into the concha is uncomfortable for some patients or customers. Furthermore, the therapeutic effect of the tinnitus maskers and noise generators placed in this way leaves to be desired.

It is therefore an object of the invention to create a retaining arrangement for otologic devices and in particular for

¹ Numbers in the margin indicate pagination in the foreign text.

tinnitus maskers and noise generators, which makes possible an improved wearing comfort and leads to an improvement of the therapeutic effect.

The object is attained by means of the features of claim 1.

By means of the elastic earpiece that attaches mechanically to the edge of the concha by way of a light spring force, it is possible to place the otologic device "freely floating" within the cavity of the concha over the auditory canal. By wearing the device in way, on the one hand, is increased the wearing

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comfort and, it was discovered, on the other hand, that this produces an improved therapeutic effect particularly in tinnitus maskers and noise generators.

The dependent claims refer to advantageous embodiments of the invention.

Further details, features, and advantages of the invention arise from the following description of the preferred exemplary embodiments with reference to the drawings, wherein:

Fig. 1 shows a first embodiment of the invention with a C-shaped earpiece;

Fig. 2 shows a second embodiment with a C-shaped earpiece, in which the carrier means for the otologic device extends away from the end of the C-shaped earpiece;

Fig. 3 shows a third embodiment that differs from the embodiment of Fig. 2 through an additional anchoring element;

Fig. 4 shows a fourth embodiment, which differs from the embodiment of Fig. 2 merely in that the carrier means for the otologic device extends away from the other end of the C-shaped earpiece;

Fig. 5 shows a fifth embodiment having a double T-shaped earpiece that is clamped at the edge of the concha and extends from the carrier means for the otologic device;

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Fig. 6 shows a sixth embodiment having an earpiece that also runs transversely to the concha;

Fig. 7 shows a seventh embodiment having an earpiece that also runs transversely to the concha; and

Fig. 8 shows an eight embodiment having an earpiece that also runs transversely to the concha and a carrier means that is seated directly on the earpiece.

Fig. 1 shows a first embodiment of the retaining arrangement of the invention that is used in an auricle 1, having a helix 2, Crura anthelicis 3, Anthelix 5, concha 6 consisting of a Cymba conchae 7 and Cavum conchae 8, Antitragus 9, Meatus acusticus externus 10 or opening of the auditory canal in the Cavum conchae 8, Tragus 11, and Fossa triangularis 12.

The first embodiment of the retaining arrangement of Fig. 1 includes a C-shaped earpiece 14 of an elastic material, which is fixed in the auricle at the edge of the concha 6 formed by the Anthelix 5, Antitragus, and Tragus. Thus, the open side of the C-shaped earpiece 14 faces the auditory canal. In the lower third of the C-shaped earpiece 14, a carrier means extends in the form of a carrier arm 15 approximately in the area of the Antitragus 9 away from the C-shaped earpiece 14 in the direction of the auditory canal 10. The carrier arm 15 is fixedly connected with an end 16 to the C-shaped earpiece 14 and the corresponding otologic device 20 is anchored at its other end 18 and floats therefore over the auditory canal 10.

Fig. 2 shows a second embodiment of the invention. The embodiment of Fig. 2 includes also a C-shaped earpiece 14 that is anchored in the same way as in the embodiment of Fig. 1 in the concha 6 or at the edge of the concha. Contrary to the embodiment of Fig. 2, the carrier means for the otologic device 20 is configured as an extension 22 of the C-shaped earpiece 14.

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The extension 22 extends away from the edge of the concha into the area of the Antitragus 9 in the direction of the auditory canal 10. At the end of the extension 22 of the earpiece 14

facing the auditory canal 8 is again anchored the corresponding otologic device 20.

Fig. 3 shows a third embodiment of the present invention, which differs from the embodiment of Fig. 2 merely in that an anchoring element 24 extends from the end of the C-shaped earpiece 14, which is above in the condition wherein it is inserted into the ear, and encompasses the part of the helix 5 that projects into the concha 6 and extends in the direction of the Tragus 11.

Fig. 4 shows a fourth embodiment of the present invention, which differs from the embodiment of Fig. 3 merely in that the anchoring element 24 of Fig. 2 serves as carrier means 26 for the otologic device 20 and that the carrier means 22 of Fig. 3 is configured as an additional anchoring element 28 and extends in the direction of the Tragus 11..

Fig. 5 shows a fifth embodiment of the present invention with an earpiece 30 that extends transversely over the concha 6 at whose ends two slightly arched upper and lower anchoring elements 32 and 34 adapted to the shape of the edge of the concha are arranged transversely to the earpiece 30. The carrier means in the form of a carrier arm 15 is anchored at an end of the earpiece 30 and extends in the direction of the

auditory canal 10, and the otologic device 20 is again anchored at its other end.

Fig. 6 shows a sixth embodiment of the invention, which differs from the embodiment of Fig. 5 merely in that the carrier arm 14 is configured as an extension 36 of the lower anchoring element 34.

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Fig. 7 shows a seventh embodiment of the invention, which differs from the embodiment of Fig. 5 in that upper and lower ball-shaped anchoring elements 38 and 40 are provided instead of the elongated anchoring elements 32 and 34.

Fig. 8 shows an eighth embodiment of the invention, which also includes an earpiece 30 running transversely over the concha 6 as well as upper and lower anchoring elements 42 and 44. The upper anchoring element 42 includes a first and a second anchoring part 46 and 47. The first anchoring part 46 is adapted in its shape to the edge of the Cyma conchae 7 and the second anchoring part 47 fixes the retaining arrangement on the part of the helix 5 projecting into the concha 6. The lower anchoring 44 fixes or anchors the retaining arrangement in the area of the Antitragus 9. Hence, the earpiece 30 extends over the auditory canal 10 and the otologic device 20 is anchored directly on the earpiece 30.

The selection of the different embodiments of the retaining arrangement for otologic devices is made, on the one hand, based on the different ear shapes, so that the different embodiments can be fixed differently well in the ear. On the other hand, the selection can also be conducted based on the personal preference or subjective perception of the patient or customer.

The corresponding otologic device 20 is preferably detachably connected in all the embodiments to the corresponding carrier means. Hence, the retaining arrangement can be

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exchanged or replaced in a simple way and different retaining arrangements can be tested in a simple way.

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Claims

1. A retaining arrangement for anchoring otologic devices (20) such as hearing aids, tinnitus maskers, and noise generators, having

an earpiece (14; 30) that is configured elastic and is dimensioned in such a way that, in the condition wherein it is inserted into the ear, said earpiece rests at least at two opposite points on the edge of the concha (6) that runs over the Anthelix (5), the Antitragus (9), and the Tragus (11), and

a carrier means (15; 22; 26; 36) for accommodating the otologic device (20), which is connected to the earpiece (14; 30), while the carrier means (15; 22; 26; 36) is dimensioned in such a way that it comes to rest in the condition wherein the otologic device (20) is inserted into the ear in the area of the confluence of the auditory canal (8) into the concha (6).

2. The retaining arrangement of claim 1, wherein the earpiece (14) is configured C-shaped and in the condition wherein it is inserted into the ear rests essentially in its entire length on the edge of the concha (6), wherein the carrier means is the carrier arm (15; 22; 26) that extends inwardly from the earpiece (14), and wherein the carrier arm (15; 22; 24) is anchored with one end on the earpiece (14) and carries at its other end the otologic device (20).

3. The retaining arrangement of claim 7, wherein the carrier arm (22; 26) extends away from one end of the C-shaped earpiece (14).

4. The retaining arrangement of claim 2, wherein the carrier arm (15) is anchored approximately in the center of the C-shaped earpiece (14).

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5. The retaining arrangement of claim 1, wherein the earpiece (30) includes anchoring elements (32, 34; 38, 40; 42, 44) at its

two ends, which in the condition wherein they are inserted into the ear come to rest on the edge of the concha, and wherein the earpiece (30) extends transversely over the concha in the condition wherein it is inserted into the ear.

6. The retaining arrangement of claim 5, wherein the anchoring elements (32, 34) are configured slightly arched and are anchored on the earpiece (30) transversely to the longitudinal direction of said earpiece.

7. The retaining arrangement of claim 5, wherein the anchoring element (42) in the position inserted into the ear has a first anchoring part (46), which rests in the area of the Crura anthelicis (7) on the edge of the concha (6), and a second anchoring part (47), which rests on the part of the helix (2) that projects into the concha (6).

8. The retaining arrangement of claim 5, wherein the anchoring elements (38, 40) are configured in ball shape.

9. The retaining arrangement of at least one of the claims 1 to 4, wherein one anchoring element (24) extends away from the end of the C-shaped earpiece (14), which is above in the condition wherein it is inserted into the ear and encompasses the part of the helix (2) projecting into the concha (6).

10. The retaining arrangement of at least one of the claims 1 to 4 and 9, wherein an anchoring element (28) extends away from

the end of the C-shaped earpiece (14), which is below in the condition wherein it is inserted into the ear, and rests in the area of the Tragus (11) on the edge of the concha (6).

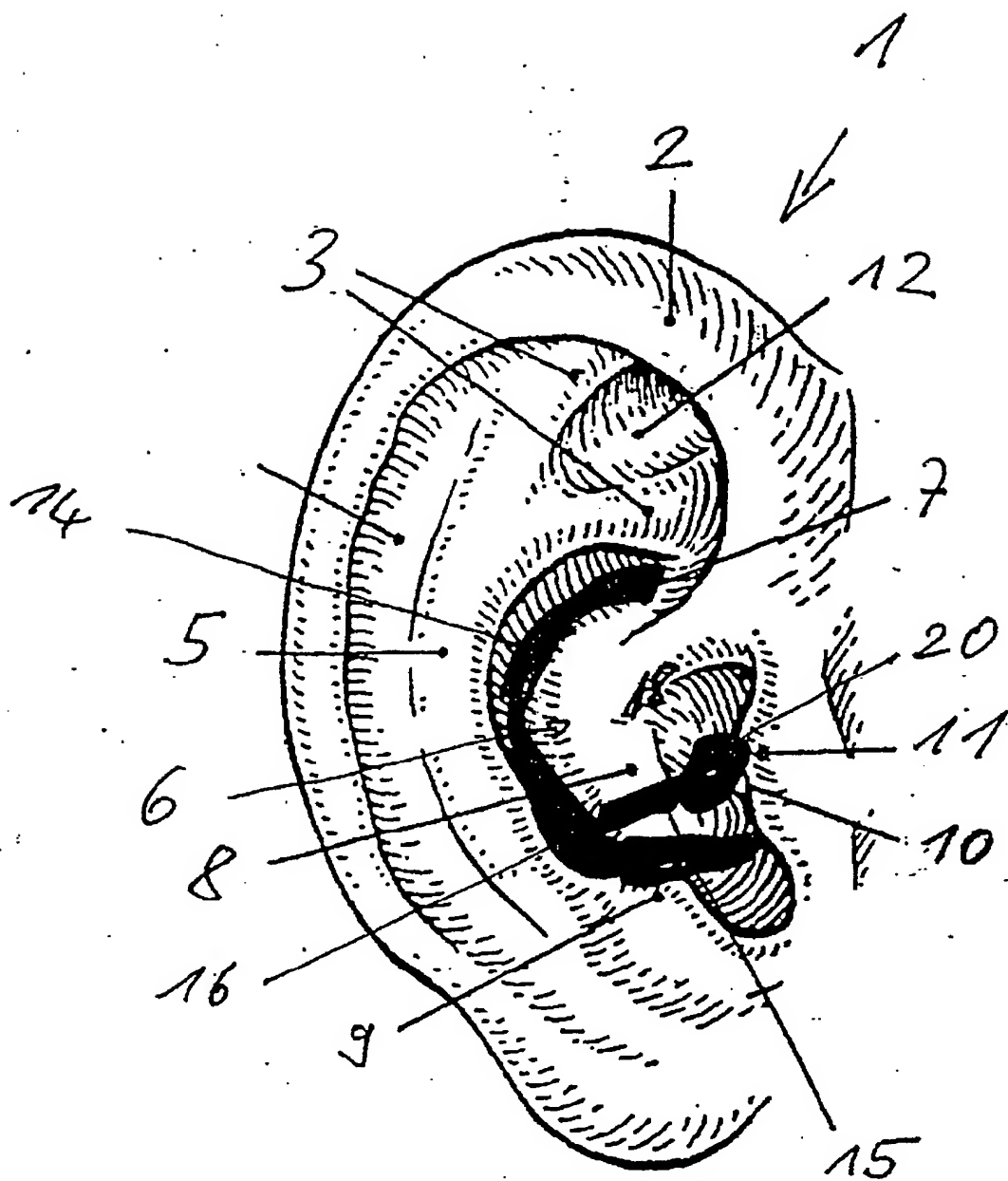


Fig. 1

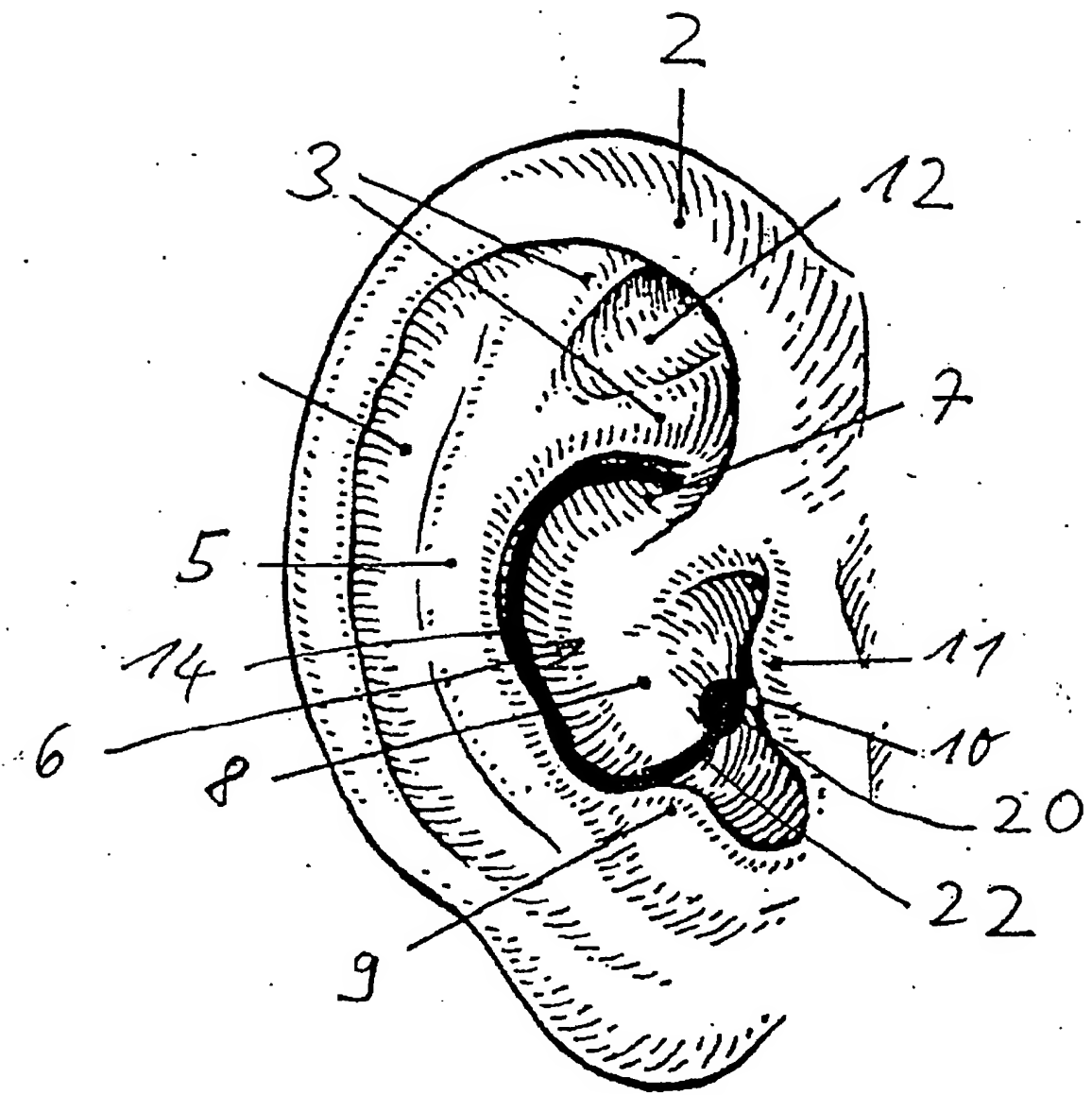


Fig. 2

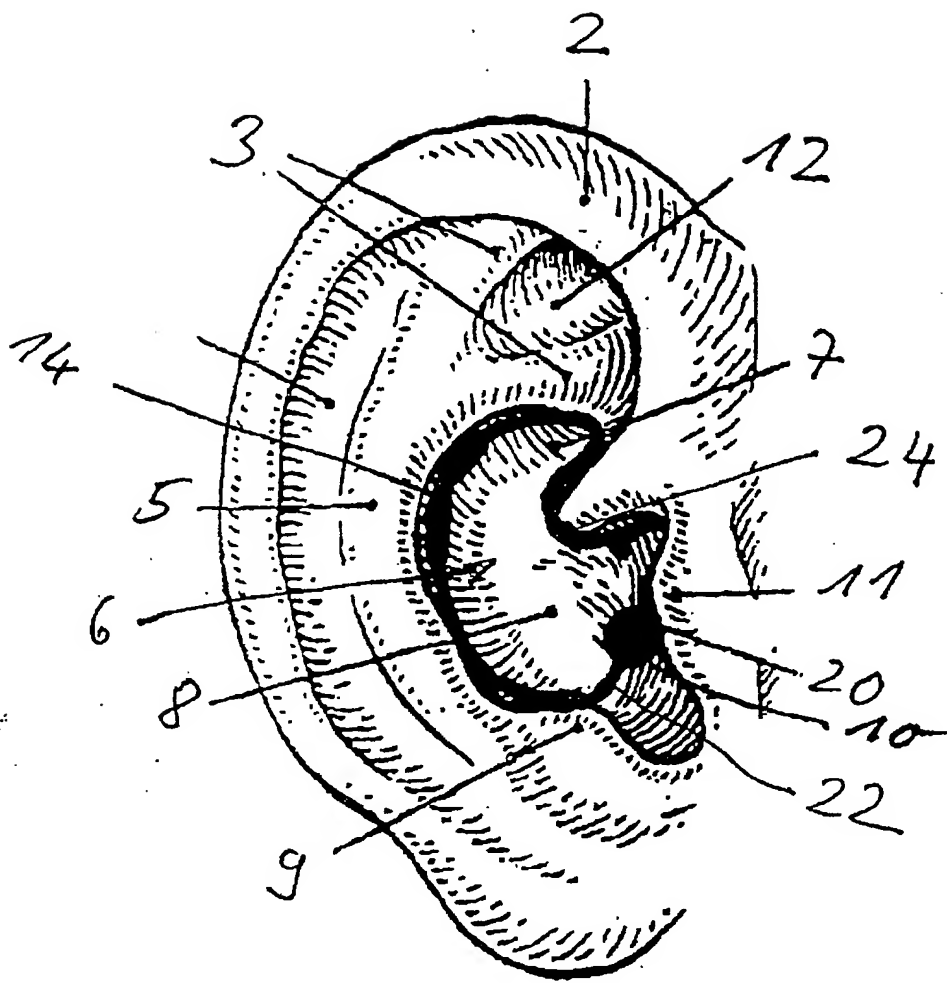


Fig. 3

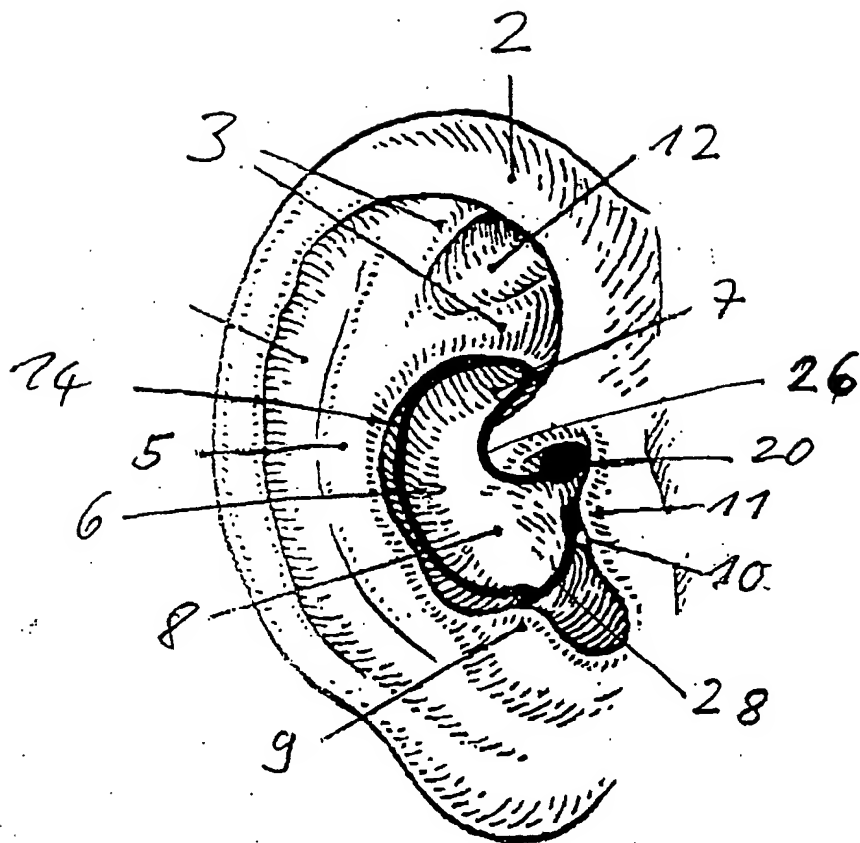


Fig. 4

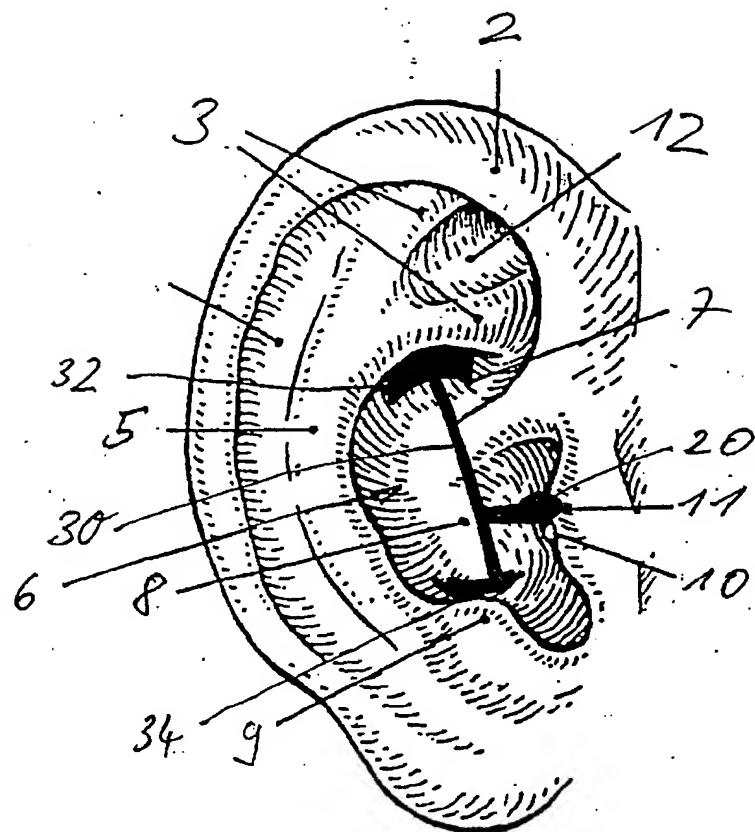


Fig. 5

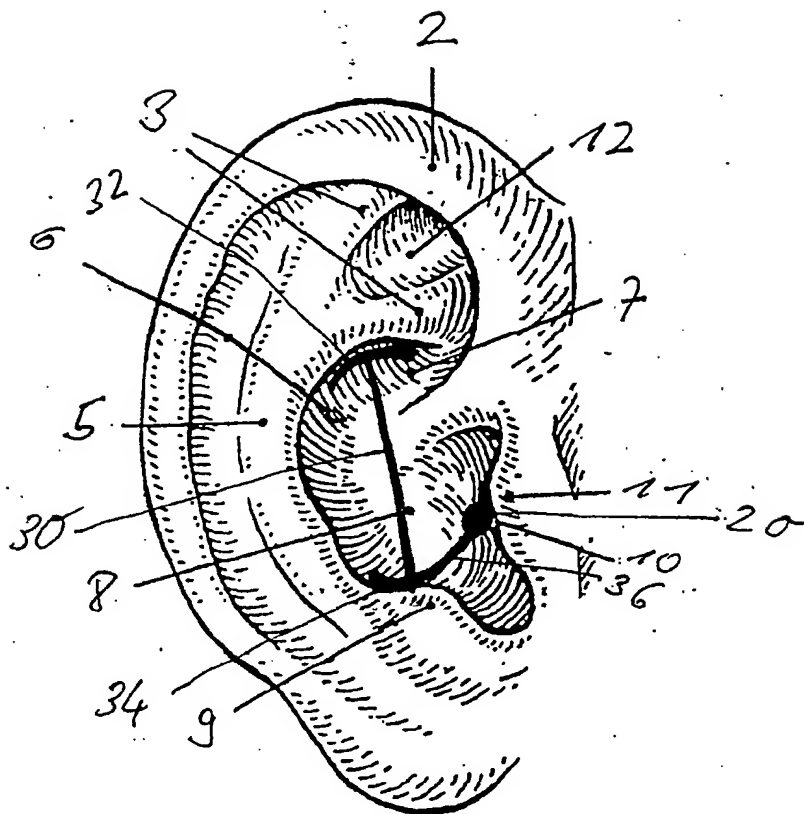


Fig. 6

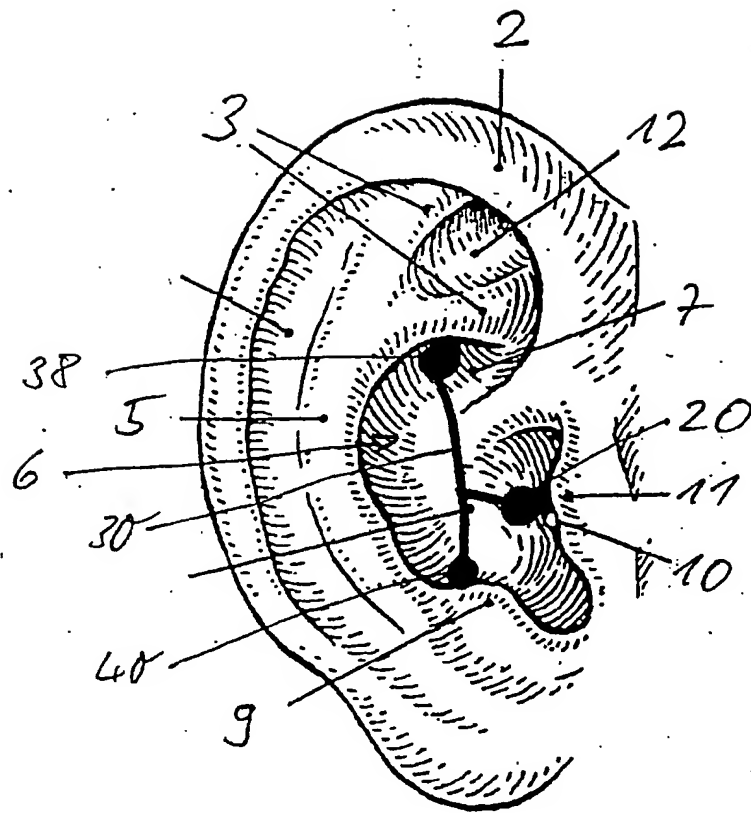


Fig. 7

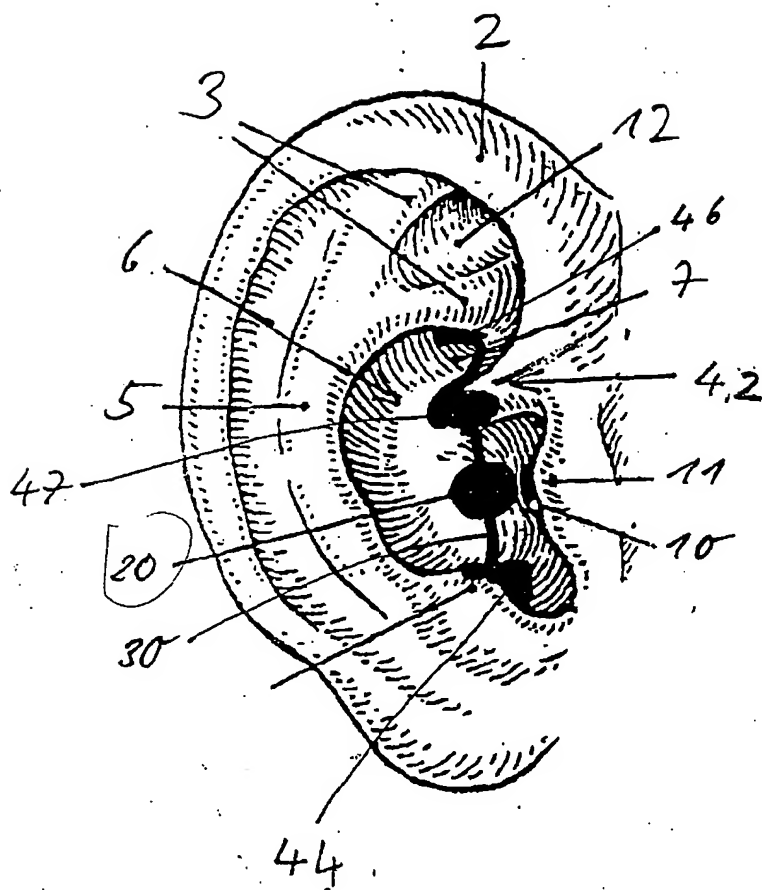


Fig. 8